Notice of Allowability	Application No.	Applicant(s)	
	09/669,280	CHUNG, CHAE HUN	
	Examiner	Art Unit	
	Pankaj Kumar	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *2/11/2005*.

2. ☒ The allowed claim(s) is/are *2-7*.

3. ☒ The drawings filed on *26 September 2000* are accepted by the Examiner.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☒ Other *Ex. Amnd. insert fig.4*.

TESFALDET BOCURE
PRIMARY EXAMINER

Continuation of Attachment(s) 9. Other: Ex. Amnd. insert fig.4.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with Robert Irvine on 3/4/2005.

3. The application has been amended as follows:

In the drawings:

Figure 4 has been added as shown in the attachment.

In the specification:

Reference to figure 4 has been made as shown in the attachment.

Remarks:

The above changes have been made to have a drawing of the allowed claim limitations of the analog downconverter.

4. The following changes to the drawings have been approved by the examiner and agreed upon by applicant: Figure 4 showing the allowed claim limitations of the analog downconverter. Applicant has already made these above agreed upon drawing changes as shown in the attachment.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (571) 272-3011. The examiner can normally be reached on Mon, Tues, Thurs and Fri after 8AM to after 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Pankaj Kumar
Patent Examiner
Art Unit 2631

PK

AMENDMENT

In the claims:

1. (Cancelled).

2. (Currently Amended) A radio frequency (RF) receiver for a code division multiple access (CDMA) mobile communication base station system, which has a plurality of receive blocks receiving RF signals via a plurality of antennas, and a plurality of frequency allocation (FA) -based channel cards, the RF receiver comprising:

an analog down-converting means for down-converting multi-FA RF signals on the respective reception paths output from the plural receive blocks to intermediate frequency (IF) signals; and

a digital down-converting means for converting the IF signals of 3 FA's on the respective reception paths output from the analog down-converting means to digital signals by reception paths, dividing the digital signals into in-phase (I) and quadrature (Q) channels, converting the divided digital signals into I/Q channel baseband signals, and outputting the FA-based I/Q channel baseband signals to the channel cards corresponding to the respective FA's ~~The RF receiver as claimed in claim 1~~, wherein the analog down converting means comprises:

a local oscillator on the individual reception paths for generating a local frequency;

a mixer on the individual reception paths for mixing the local frequency generated from the local oscillator with the multi-PA RF signals on the individual reception paths output from the plural receive blocks to generate multi-FA IF signals on the individual reception paths; and

an SAW filter on the individual reception paths for limiting the band of the multi-FA IF signals on the individual reception paths output from the individual mixer to the bandpass of a bandwidth corresponding to the multi-FA bandwidth.

2-3. (Original) The RE receiver as claimed in claim ~~2~~ 1, wherein the multiple PA's are 3 PA's, the IF frequency on the individual reception paths of "0" and '1" is 70 MHz, and the bandwidth of the SAW filter is 3.75 MHz corresponding to the 3 FA's

3 ~~4~~. (Currently Amended) A radio frequency (RF) receiver for a code division multiple access (CDMA) mobile communication base station system, which has a plurality of receive blocks receiving RF signals via a plurality of antennas, and a plurality of frequency allocation (FA) based channel cards, the RF receiver comprising:

an analog down-converting means for down-converting multi-FA RF signals on the respective reception paths output from the plural receive blocks to intermediate frequency (IF) signals; and

a digital down-converting means for converting the IF signals of 3 FA's on the respective reception paths output from the analog down-converting means to digital signals by reception paths, dividing the digital signals into in-phase (I) and quadrature (Q) channels, converting the divided digital signals into I/Q channel baseband signals, and outputting the FA-based I/Q channel baseband signals to the channel cards corresponding to the respective FA's ~~The RE receiver as claimed in claim 1~~, wherein the digital down-converting means comprises:

an analog-to-digital converter on the individual reception paths for converting the IF signals output from the analog down-converters to digital signals;

a FA-based digital unit on the individual reception paths for dividing the digital signals output from each analog-to-digital converter into the FA-based I/Q channels on the individual reception paths to perform QPSK. demodulation and down-converting the I/Q channel digital signals to I/Q channel baseband signals; and

a multiplexer for multiplexing the reception paths and the I/Q channel baseband signals output from the FA-based digital unit and generating the multiplexed digital signals to the channel cards corresponding to the respective FA's.

5. (Original) The RE receiver as claimed in claim ~~4~~ 3, wherein the digital unit comprises:

a first reception path 0FA digital unit for converting the digital signals output from the analog-to-digital converter corresponding to the first reception path to the I/Q channel baseband signals assigned to 0FA;

a first reception path 1FA digital unit for converting the digital signals output from the analog-to-digital converter corresponding to the first reception path to the I/Q channel baseband signals assigned to 1FA;

a first reception path 2FA digital unit for converting the digital signals output from the analog-to-digital converter corresponding to the first reception path to the I/Q channel baseband signals assigned to 2FA;

a second reception path 0FA digital unit for converting the digital signals output from the analog-to-digital converter corresponding to the second reception path to the I/Q channel baseband signals assigned to 0FA;

a second reception path 1FA digital unit for converting the digital signals output from the analog-to-digital converter corresponding to the second reception path to the I/Q channel baseband signals assigned to 1FA; and

a second reception path 2FA digital unit for converting the digital signals output from the analog-to-digital converter corresponding to the second reception path to the I/Q channel baseband signals assigned to 2FA.

5 6. (Original) The RF receiver as claimed in claim ~~4~~ 3, wherein the individual FA-based digital unit comprises:

a channel divider for dividing the digital signals output from the analog-to-digital converter on the corresponding reception paths into I and Q channels for QPSK demodulation at the digital unit on the respective reception paths;

a local oscillator for generating a local frequency;

a mixer for mixing the local frequency generated from the local oscillator with the divided I/Q channel signals to convert the I/Q channel signals to I/Q channel baseband signals; and

a digital FIR filter for band-pass filtering the respective reception paths and the FA-based I/Q channel baseband signals output from the mixer and generating the band-limited baseband signals to the multiplexer.

6 7. (Original) The RF receiver as claimed in claim ~~4~~ 3, wherein the multiplexer multiplexes:

the I/Q channel baseband signals output from the first reception path 0FA digital unit and the I/Q channel baseband signals output from the second reception path 0FA digital unit;

the I/Q channel baseband signals output from the first reception path 1FA digital unit and the I/Q channel baseband signals output from the second reception path 1FA digital unit; and

the I/Q channel baseband signals output from the first reception path 2FA digital unit and the I/Q channel baseband signals output from the second reception path 2FA digital unit, and

generates the multiplexed signals to the channel cards corresponding to the respective FA's.

8. (Cancelled).